

## **EXPLANATORY NOTE FOR SCHEDULE OF RATE**

### **GENERAL:**

- a] Wherever an item of work covers supply of materials and/or erection, such item shall include all bolts, nuts, and washers of GI/SS etc. as per CORE/RDSO latest specification & drawing, procured from RDSO/CORE approved sources to complete the item of work. No separate payment for fasteners is admissible.
- b] Erection of any item of equipment, whether supplied by the purchaser or contractor will include testing, commissioning and bringing the equipment into operation to the entire satisfaction of the purchaser.
- c] The basic quantity of components and materials required to make up a unit of work for the selected items are indicated for guidance only. There may be minor variation to suit erection but no adjustment in prices shall be made on that account. Prices quoted shall be inclusive of all incidental charges viz. freight, handling, taxes, duties, insurance, GST if any and works contract tax as applicable etc.
- d] All OHE components are to be supplied by the contractor as per latest specification & drawing of CORE or RDSO whether specifically mentioned or not.
- e] All works shall be carried out strictly in accordance to the CORE/RDSO drawings, specifications and guidelines if any. However any modified arrangement if in vogue in S. E. Railway or suggested by Sr.DEE/TRD/KGP, the work will be executed accordingly without any alteration in accepted rates.
- f] Such materials as have been issued to the contractor but left behind with him unutilized, shall be determined after reconciliation with the actual quantum issued vis-a-vis utilized for execution of the work and returned to the purchaser at no extra cost in the same condition of the material as were issued to the contractor. If the contractor fails to return such materials, the cost of such materials will be recovered at twice the book rate or twice the market rate enhanced by plus 5% freight charges and 2% incidental charges together with supervision charges at 12.50% of the total cost inclusive material, freight and incidental charges whichever is higher.
- g] The special condition & Technical specifications for schedule items are enclosed and Tenderer shall go through them thoroughly before submitting offer.
- h] The basic quantities of components and materials required to make up a unit of work, are indicated for guidance only. There may be minor variations to suit erection but no adjustment in prices of price schedule shall be made on that account. In estimating the prices for various items of work, provision for loss and wastage `in transit and erection should be provided for, over and above the basic quantities of components and materials required to make up a unit of work, indicated herein, except where otherwise specified for materials supplied by the Purchaser.
- i] In the explanatory notes given in Section 2 of this chapter, the term "bimetallic connection" is meant to cover any connection between a copper conductor and an aluminum conductor. The clamps used for such connections shall be made of a suitable aluminum alloy or copper alloy and the copper/aluminum conductor shall be wrapped with a bimetallic (aluminum copper) strip to prevent direct contact between aluminum and copper.
- j] Reconciliation of materials supplied by the Purchaser.
  - a) The following procedure shall be adopted for the final reconciliation of the various equipment's, materials, fittings and conductors supplied by the purchaser.
  - b) All the materials supplied by the purchaser shall be correctly accounted for and quantities reconciled on completion of the work by the contractor. On completion of work, all surplus

materials supplied by the purchaser together with the ones found defective or that have become defective or broken on account of defective materials and/or workmanship shall be returned to him by the contractor.

c) Wires and conductors: The purchaser will supply to the contractor all wires and conductors required for the work based on unit quantities, inclusive of erection allowances i.e., 0.5% (zero point five percent).

It is general condition that the contractor shall return to the purchaser all wires and conductors which have been supplied to him but not utilized on works. Should the contractor be unable to do so, the purchaser shall be entitled to recover the cost of such wires and conductors. For the purpose of reconciliation the length of wire or conductor deemed to have been supplied by the purchaser to contractor will be the length stenciled on the drum and the length deemed to have been returned by the contractor will be the actual length of cut-pieces and/or the length calculated on the basis of the actual weight of cut pieces scrap and linear density.

- k] The work will must be satisfactorily completed within LOA mansion date. The firm/agency must do the work in progressive manner in terms of duration of the contract. Otherwise the competent authority taken necessity action as per GCC clause.
- l] Explanatory note for various items of works in the Schedule of item, quantities and prices are given below.

**ADEE/TRD/Sub/SRC**

## **PARTICULARS OF SCHEDULE OF ITEMS**

| <b>Schedule - A</b> |                                  |
|---------------------|----------------------------------|
| Item No-01          | Preparation of OHE Design & Drg. |

The price shall cover the following:-

- i) Preparation & submission of pre-pegging, pegging & OHE layout plan (LOP).
- ii) Preparation of cross section drawings (CSD) and structure erection drawings (SED) for individual location.
- iii) Selection of type & size of foundations with respect to type of soil which will be ensured after testing of soil.
- iv) Supply of above mentioned drawings duly approved. 6 copies of LOP, CSD and SED shall be supplied for reference at field, office and TRD officials.
- v) Preparation and supply of as erected above mentioned drawings shall be one copy in original + 2 RTF + 3 Ammonia prints.
- vi) Supply of prepared layout in re-writable CD or DVD as a soft copy.

Notes for measurement for Item-1:

For the purpose of payment against this item, the length of track shall be measured as under:

General: The difference in the chainage of the length under consideration, as incorporated in the layout plans in Km.

Turnout: The track taking off shall be deemed as starting from the toe of the switch of the turnout.

Crossover: The length of the track shall be taken as difference in the chainage of the toes of switches of the two turnouts constituting the crossover.

Diamond crossing with or without sleep: The two track crossing each other shall be measured independently as per note 1 above as though there were no crossing. No extra payments or allowance shall be provided for slip points.

Dead ends and top of loops: The lengths for payment under this item shall up to the chainage of anchor mast of the terminating OHE.

|            |  |
|------------|--|
| Item No-02 | Preparation of OHE Design & Drg. for Auxiliary Transformer |
|------------|--|

The price shall cover the following:-

- i) Preparation & submission of pre-pegging, pegging & OHE layout plan (LOP).
- ii) Preparation of cross section drawings (CSD) and structure erection drawings (SED) for individual location.
- iii) Selection of type & size of foundations with respect to type of soil which will be ensured after testing of soil.
- iv) Supply of above mentioned drawings duly approved. 6 copies of LOP, CSD and SED shall be supplied for reference at field, office and TRD officials.
- v) Preparation and supply of as erected above mentioned drawings shall be one copy in original + 2 RTF + 3 Ammonia prints.
- vi) Supply of prepared layout in re-writable CD or DVD as a soft copy.

|            |   |
|------------|---|
| Item No-03 | Concrete for foundation/plinth including supply of sand, ballast & cement |
|------------|---|

The price shall cover excavation, supply and handling of all materials and accessories, temporary arrangements for excavation, concreting and grouting thereafter including supply of sand, cement and ballast & other materials whatsoever. Price also includes supply and handling of arrangements for shorting & shuttering where necessary, casting, concrete, grouting of mast/structure & finishing the top of concrete foundations with muff. Price also includes dismantling of temporary arrangement and removal and dressing of soil to the original condition.

Mix of Concrete:-

Concrete for foundation shall be nominal mix of grade M10 obtained by mixing cement, coarse aggregate, fine aggregate and water in accordance with proportions given vide Table 3 of IS: 456-1978 reproduced below. For grouting, mulling, embedding of structures in foundations and for cable trenches, nominal mix concrete M-15 obtained by mixing materials in proportions as indicated

in Table-3 of IS: 456-1978 shall be used. Volume batching may be adopted vide Clause 9.2.2 of IS:456- 1978 reproduced below:-

**TABLE 3: PROPORTIONS FOR NOMINAL MIX CONCRETE** (Clause 8, 3, 8, 3.1 and 8, 3, 2)

| Grade of Concrete | Total quantity of dry aggregate by mass per 50 Kg. of cement, to be taken as the sum of the individual masses of fine & coarse aggregates Max, | Proportion of fine aggregate to coarse aggregate (by Mass) | Quantity of water per 50Kg of cement Max. |
|-------------------|--|--|---|
| 1                 | 2  | 3  | 4   |
|                   | Kg   |  | Liters                                    |
| M 5 (1:5:10)      | 800  | Generally 1:2  | 60  |
| M 7.5 (1:4:8)     | 625  | But subject to   | 45  |
| M 10 (1:3:6)      | 480  | of 1: 1.5 and a  | 34  |
| M 15 (1:2:4)      | 350  | lower limit'   | 32  |
| M 20 (1:1.5:3)    | 250  | of 1: 2.5  | 30  |

NOTE: : The proportions of the fine to coarse aggregates should be adjusted from upper limit to lower limit progressively as the grading of the fine aggregate becomes fine and the maximum aggregate becomes large.

EXAMPLE:- For an average grading of fine aggregate specification for coarse and fine aggregate from natural source for concrete (Second revision) that is zone II of Table 4 of IS: 383- 1970, the proportions shall be 1:1.5, 1:2 and 1:2.5 for maximum size of aggregate 10mm, 20mm and 40mm respectively.

In case uniformity in the materials used for concrete making has been established over a period of time. The proportioning may be done by volume batching, provided periodic checks are made on mass/volume relationship of the materials. Where weight-batching is not practicable, the quantities of fine and coarse aggregate (not cement) may be determined by volume, if the fine aggregate is moist and volume batching is adopted, allowance shall be made for bulking in accordance with IS: 2386 (Part-III)- 1963\*

'Methods of test of aggregates for concrete'

Part III Specific gravity, density, voids, absorption of bulking

In judging the acceptability of the materials, quality of concrete and the method of works, the Purchaser will generally observe the provisions of the 'Indian Standard Code' of Practice for plain and reinforced concrete, IS: 456 – 1978. The crushing strength of concrete shall not be less than the limits given below:-

Crushing strength of 15 cm cubes by works test.

| Concrete | At 7 days age.         | At 28 days age.        |
|----------|------------------------|------------------------|
| a) M.10  | 70 Kg/cm <sup>2</sup>  | 100 Kg/cm <sup>2</sup> |
| b) M.15  | 100 Kg/cm <sup>2</sup> | 150 Kg/cm <sup>2</sup> |

For an average grading of fine aggregate the proportions shall be 1:1.5; 1:2 and 1:2.5 for maximum size of aggregates 10mm, 20mm and 40mm respectively.

Notes for measurement for Item-3

- 1) The rates per cubic metre (Cum) under item 3 shall be same for any shape or size of concrete blocks. In calculating the individual volume of concrete, fraction of cubic metre beyond the third decimal shall be rounded off to the next nearest third decimal.
- 2) The prices shall apply for concreting of all foundation for mast, gantries, portals, anchor blocks for guy rods, and fencing uprights, TTC, dwarf mast etc.
- 3) For purpose of computation of volume of concrete under item 3, the volume of steel work embedded in the foundation block shall be ignored.
- 4) Cost all concrete will be paid for only under item 3 and the prices of other items shall not include cost of concrete.
- 5) For purpose of computation of volume of concrete under item 3, the volume of concrete shall include the volume of sand and bitumen in sand cored foundation.

- 6) For purpose of computation of volume of concrete the volume of each muff for all masts shall be taken as 0.02 Cum except for masts with balance weights and for each upright of portal, each head span mast, 2 or 3 track cantilever masts, and special fabricated masts for which the volume of muff shall be taken as 0.08 Cum, irrespective of the size and shape of muff, on a flat rate basis.
- 7) The prices under item 3 shall also include the cost of concrete for embedment of drain pipes, where required.
- 8) The prices under item 3 shall also cover the cost of concrete for diversion of masonry/earth drain wherever necessary for casting of foundation.
- 9) Cement for use in the works should be of make ACC/Ambuja/Lafarge/Konark in accordance of IS 456. Cement is to be procured by the contractor from authorized dealers only.
- 10) Cement bag should bear the following information in legible markings:
  - a) Manufacturer's name.
  - b) Registered trademark of manufacturer, if any.
  - c) Type of cement.
  - d) Weight of each bag in Kg.
  - e) Date of manufacture, generally marked as week, month and year of manufacture, e.g. 01.01.2023, which means 1<sup>st</sup> week of JAN' 2023.
  - f) For the work under item 3 the purchaser's Engineer shall certify where use of chisel and hammer or blasting has been necessary above and contractor shall arrange for supply of explosives and all tools and plants for blasting operation at his own cost. If half or more of the depth or width of excavation is in hard soil/concrete/masonry drains/walls or in rock, the payable volume of the foundation shall be the designed one as shown in the drawings for which the hole has been blasted, irrespective of the actual configuration assumed by the latter due to the blasting. The depth of the excavation shall be measured from the formation level to the maximum excavated point
- 11) Cube test: The contractor shall arrange concrete cube test as per relevant IS specification to be used in foundation. The cost of test shall be borne by the contractor i.e. price is inclusive. At least one cube test shall be carried out by the contractor for completion of each 50 Cu.m or its fraction of foundation casting for entire volume of work.
- 12) To ensure quality control, test certificate from the manufacturers should be produced by the contractors, which should conform to the relevant specifications (latest may be incorporated).
- 13) Concrete for foundation shall be nominal mix of grade M-10 obtained by mixing cement, coarse aggregate, fine aggregate and water in accordance with table-3 of IS: 456. For grouting, mugging, embedding of structure in foundation and for cable trench at switching stations, nominal mix concrete M-15 obtained by mixing materials in proportion as indicated in table-3 of IS: 456 shall be used.
- 14) Railways may also take samples during the course of work and get the cement tested to ascertain their conformity to specifications.

#### **Schedule - B**

|            |   |
|------------|---|
| Item No-01 | Supply of fabricated and galvanised traction mast/TTC/Portal/Feeder Mast/AT Mast etc. |
|------------|---|

The price shall cover supply of fabricated and galvanised traction mast/TTC/ Portal/AT mast/Gantry Mast/Feeder Mast should be minimum average weight of zinc coating (610g/m<sup>2</sup>). The material to be procured from CORE/RDSO approved suppliers conforming to latest CORE/RDSO approved drawings and specifications. The type of mast will be as per approved design and the supply will be made on written order of Sr.DEE/TRD/KGP or his authorized representative.

#### **PAYABLE UNIT WEIGHTS FOR STANDARD MASTS**

| Sr. No. | Type of masts            | Standard Length in Meters | Weight in Kg./ Mtr. including Galv. | Total Wt. of finished Galv. STR in Kg. |
|---------|--------------------------|---------------------------|-------------------------------------|--|
| 1       | 8 inch x 6 inch x 35 RSJ | 9.50                      | 52.00                               | 494.00                                 |

|    |                             |        |        |         |
|----|-----------------------------|--------|--------|---------|
| 2  | 6 inch x 6 inch x 25.15 BFB | 9.50   | 37.10  | 352.45  |
| 3  | B150                        | 9.50   | 38.91  | 369.690 |
| 4  | B175                        | 9.50   | 44.51  | 422.890 |
| 5  | B200                        | 9.50   | 49.91  | 474.19  |
| 6  | B225                        | 9.50   | 60.31  | 573.00  |
| 7  | B250                        | 9.50   | 70.72  | 365.268 |
| 8  | NU                          | 10.445 | 34.97  | 365.268 |
| 9  | NE1                         | 5.38   | 34.178 | 183.88  |
| 10 | NE2                         | 5.88   | 33.875 | 199.185 |
| 11 | NB1                         | 1.50   | 45.892 | 68.838  |
| 12 | NB2                         | 3.00   | 37.001 | 111.003 |
| 13 | NB3                         | 4.50   | 35.687 | 160.592 |
| 14 | NB4                         | 6.00   | 35.035 | 210.210 |
| 15 | NB5                         | 7.50   | 33.649 | 252.373 |
| 16 | NB6                         | 9.00   | 33.551 | 301.964 |
| 17 | RU                          | 10.58  | 59.308 | 627.475 |
| 18 | RE1                         | 11.60  | 54.683 | 634.329 |
| 19 | RE2                         | 12.10  | 54.591 | 660.563 |
| 20 | RB1                         | 7.50   | 57.678 | 432.588 |
| 21 | RB2                         | 9.00   | 56.412 | 507.71  |
| 22 | RB3                         | 10.50  | 55.853 | 586.463 |
| 23 | RB4                         | 12.00  | 55.437 | 665.248 |
| 24 | RB5                         | 13.00  | 55.221 | 717.882 |
| 25 | OU                          | 10.535 | 55.524 | 584.950 |
| 26 | OE1                         | 10.548 | 52.218 | 550.796 |
| 27 | OE2                         | 11.048 | 52.042 | 574.963 |
| 28 | OB1                         | 1.50   | 77.842 | 116.764 |
| 29 | OB2                         | 3.00   | 60.458 | 181.375 |
| 30 | OB3                         | 4.50   | 57.828 | 260.226 |
| 31 | OB4                         | 6.00   | 56.765 | 340.591 |
| 32 | OB5                         | 7.50   | 54.026 | 405.202 |
| 33 | OB6                         | 9.00   | 53.605 | 482.453 |
| 34 | TTC                         | 10.135 | 69.842 | 784.876 |
| 35 | TTB1                        | 5.50   | 47.874 | 263.312 |
| 36 | TTB2                        | 8.00   | 45.353 | 362.829 |
| 37 | TTK1 & TTK2                 |        |        | 87.668  |

|            |  |
|------------|--|
| Item No-02 | Supply of fabricated and galvanized steel work other than mast |
|------------|--|

The price shall cover the cost of supply of all fabricated galvanized small part steel should be minimum average weight of zinc coating (610g/m<sup>2</sup>) as per RDSO/CORE specification & drawing, excluding fasteners which are required to be supplied by the contractor. For standard fabricated galvanized small part steel work for which RDSO's drawings are available, the weight of small part steel work shall be considered for payment. However, in case the unit sectional weight of any member indicated in RDSO's drawing is not in conformity with the unit sectional weight as per the latest IS specification, the weight of the fabricated SPS work shall be calculated on the basis of latest IS specification and the same will be considered for payment with the due approval of Sr.DEE/TRD/KGP or his authorized representative. For the non-standard fabricated SPS work, the calculated weight to be considered for payment under this item shall be included in the relevant drawing based on, latest IS sectional weight at the time of submitting the designs for approval of the purchaser.

| <b>Schedule - C</b> |   |
|---------------------|---|
| Item No-01          | Supply of Regulating equipment (ATD)-three Pulley Type with modified Pulley Groove (3:1 Ration) with all fittings without counter weight. |

Supply of regulating equipment (ATD)-three Pulley Type with modified Pulley Groove (3:1 Ratio) with all fittings without counter weight as per RDSO specification or latest, complete with all accessories including counter weight assembly & SS wire rope for conventional OHE.

The price shall cover supply of regulating equipment (ATD) 3:1 ratio complete with assembly including 9T adjuster with double strap assembly and normal/antitheft guide tube assembly, complete attachment for AFD for normal mast/fabricated mast as per site requirement, S.S. wire rope of regulating equipment, small part steel work and without counter weight assembly. Price shall cover provision of forged OHE fitting as per RDSO's/CORE approved materials.

| Sl. No. | Description of Item   | Quantity | Part No.   |
|---------|---|----------|------------|
| 1       | Regulating equipment (modified 3:1 ratio) with 250 dia pulley set, clevis and eye, S.S. rope end fittings and wedges, AFD, S.S. wire rope 8.5 mm dia, 8.00 inter length with required bolts, nuts, lock nuts and washers. | 1 Set    | 5500       |
| 2.      | 9 Ton adjuster  | 1 No     | 5020       |
| 3.      | Double Strap complete   | 1 Set    | 5031       |
| 4.      | Counter weight eye rod 1.55 mtr.  | 1 No     | 5099       |
| 5.      | Guide tube assembly   | 1 Set    | 5060       |
| a.      | Guide tube 5.60 mtr.  | 1 No     | 5063-1     |
| b.      | Guide tube bracket  | 2 Nos    | 9050/51    |
| c.      | Guide tube support angle  | 2 Nos    | 9052/3/4/5 |
| d.      | GI bolt, nuts 16 X 260/360 X 100  | 4 Nos    | ...        |
| 6.      | Attachment for AFD  | 1 Set    | ...        |
| a.      | Anchor attachment for fabricated mast   | 1 No     | 3241       |
| b.      | Backing angle   | 2 Nos    | ...        |
| c.      | GI bolt, nut, lock nut-20 X 230/260/320 X 57  | 4 Nos    | ...        |
| d.      | Backing Angle   | 1 No     | 3243       |
| e.      | Anchor  | 1 No     | 3241       |

#### **Schedule - D**

|            |   |
|------------|---|
| Item No-01 | Supply of Single Bkt. Assembly complete without insulators for conventional OHE |
|------------|---|

The price shall cover of a flat rate basis any bracket assembly of CORE/RDSO approved make on traction mast or support on drop arm and shall include those on high/low level platform, in the vicinity of turn-outs, over bridges or over-laps and at locations with reduced encumbrance or terminating wires.

The price shall include the cost of supply of all components including galvanized having minimum average weight of zinc coating (610g/m<sup>2</sup>), large ERW steel tube conforming to latest CORE/RDSO specification and inspection and firm approved source but excluding small parts steel work complete with bolts, nuts, washer if any, dropper wire and insulators. Price shall cover Forged OHE fitting as per RDSO's letter No.TI/OHE/FTGFE/11, Dt:23.01.2012.

| Rly. id No.         | Description of components  | Qty. per unit |
|---------------------|--|---------------|
| 2400                | Tubular stay arm assembly (including galvanized large ERW steel tube).   | 1 set         |
| 2110/2130/2380      | Catenary suspension bracket assembly or hook bracket   | 1 set         |
| 1160/2120/2140/1174 | Suspension clamp with packing saddle   | 1 set         |
| 2040/2080           | Bracket tube assembly complete with tube cap and sleeve where required (including galvanized steel tube).                                      | 1 set         |
| 3070-1/2            | Mast bracket fitting assembly including 2 off bolts, nuts, lock nuts and washer of 16Ø for attachment to structure for small parts steel work. | 1 set         |
| 3020-1              | Mast fitting for hook insulator including fasteners.   | 1 set         |
| 2150-2/2160-2       | Register arm hook assembly complete with bolts, nuts and lock nuts.  | 1 off         |
| 2420/ 2430          | Register arm assembly of raised register arm RRA   | 1 set         |

|                               |   |             |
|-------------------------------|---|-------------|
|                               | assembly including galvanized steel tube with fasteners required.                   |             |
| 2270-4 or 5<br>2460-2, 2470-2 | Register arm dropper assembly complete with bolts, nuts etc. excluding dropper wire | 2 set       |
| 2390/2540/2520                | BFB steady arm or bent steady arm (where required)                                  | As required |
| 2360/ 2490-2                  | 25mm steady arm drop bracket/clamp including fasteners.                             | As required |
| 1220/1370/-3                  | Contract wire swivel clip with pin or raised register arm clamp with fasteners.     | 1 off       |
| 2550-1/2                      | Anti-wind clamp with fasteners.   | As required |
| TI/MI/0058 rev. 1             | RRA clamp and packing saddle  | 2 Set       |

Any other items if required to replace the old cantilever assembly by new except insulator. No MCI fitting is acceptable for which Forged fitting are available as per RDSO letter TI/OHE/FTGFE/12 dt 13.07.2012.

#### **Schedule - E**

|            |                          |
|------------|--------------------------|
| Item No-01 | Supply of Stay Insulator |
|------------|--------------------------|

The price shall cover supply of Stay Insulator (porcelain) with creepage path (1050 mm) from CORE/RDSO approved drawing/specification and should be procured from CORE/RDSO approved sources.

|            |                             |
|------------|-----------------------------|
| Item No-02 | Supply of Bracket Insulator |
|------------|-----------------------------|

The price shall cover supply of Bracket Insulator (porcelain) with creepage path (1050 mm) from CORE/RDSO approved drawing/specification and should be procured from CORE/RDSO approved sources.

|            |                               |
|------------|-------------------------------|
| Item No-03 | Supply of 25kV Post Insulator |
|------------|-------------------------------|

The price shall cover supply of 25kV Post Insulator (porcelain) from CORE/RDSO approved drawing/specification and should be procured from CORE/RDSO approved sources.

|            |  |
|------------|--|
| Item No-04 | Supply of 25kV solid core cut-in-insulator |
|------------|--|

The price shall cover supply of 25kV solid core cut-in-insulator (porcelain) with creepage path (1050 mm) from CORE/RDSO approved drawing/specification and should be procured from CORE/RDSO approved sources.

#### **Schedule – F**

|            |  |
|------------|--|
| Item No-01 | Supply of section insulator assembly including core & cut-in insulator |
|------------|--|

The price shall cover supply of all components including core and cut-in-insulator required for a stranded section insulator assembly including special arrangement for supporting the equipment's and terminal fittings for conductors and the section insulators assembly including PG clamp and section insulator number tag. etc. (adjustable dropper wire will be supply by Railways).

#### **Schedule - G**

|            |  |
|------------|--|
| Item No-01 | Supply of 25KV/240V Auxiliary supply transformer (25kVA Capacity). |
|------------|--|

Price shall cover supply of 25KV/240V Auxiliary supply transformer (25kVA Capacity) as per RDSO Specification No. or latest complete with all fittings and accessories suitable to 25KV/240V Auxiliary supply transformer (25kVA Capacity). The materials should be procured through RDSO/CORE approved sources.

#### **Schedule - H**

|            |   |
|------------|---|
| Item No-01 | Supply of Lightning Arrestor, 42kV, Metal Oxide Gapless type as per RDSO Specification No. TI/ SPC/PSI/MOGTLA/0101[02/2015] or latest |
|------------|---|

The price shall cover Supply of Lightning Arrestor, 42kV, Metal Oxide Gapless type as per RDSO Specification No. TI/ SPC/PSI/MOGTLA/0101[02/2015] or latest complete with all fittings and accessories suitable to Lightning Arrestor, 42kV, Metal Oxide Gapless type. The materials should be procured through RDSO/CORE approved sources.

| <b>Schedule - I</b> |   |
|---------------------|---|
| Item No-01          | Supply of 25KV Drop out fuse switch assembly for 25kVA/10KVA Auxiliary transformer including base insulator |

The price shall cover Supply of 25KV Drop out fuse switch assembly for 25kVA/10KVA Auxiliary transformer including base insulator along with HDBC conductor terminal lug, pedestal insulators and barrel of CORE/RDSO approved as per RDSO's Spec. No. ETI/PSI/14/01/86 with latest amendment.

|            |  |
|------------|--|
| Item No-02 | Supply of Cu cable Single core size:276/0.4(35 sq mm) PVC insulated 1100V grade to RDSO specn. No. RDSO/PE/SPEC/TL/0027[Rev.0] with Amndt.No.1 |
|------------|--|

The price shall cover supply of Cu cable Single core size:276/0.4 (35 sq mm) PVC insulated 1100V grade to RDSO specn. No. RDSO/PE/SPEC/TL/0027[Rev.0] with Amndt. No.1.

|            |   |
|------------|---|
| Item No-03 | Supply of Class 3 Dis-connector suitable for 42kV Lightning arrestors as per RDSO Spec. No. TI/PSI/GAPLA/POLICY/13, Dtd. 17/10/2013 |
|------------|---|

Price shall cover supply of class 3 dis-connector for 42kV, Metal Oxide Gapless type Lightning Arrestor, as per RDSO Specification No. TI/PSI/ GAPLA/POLICY/13 or latest complete with all fittings and accessories suitable to 42 kV LA, metal oxide gapless type. Price shall also cover supply of earth plate for connecting base insulator to dis-connector. The materials should be procured through RDSO/CORE approved sources.

|            |  |
|------------|--|
| Item No-04 | Supply of 1100V Grade Twin Core Aluminium armoured XLPE cables (size in sq.mm 2X120.0) |
|------------|--|

The price shall cover supply of cable per meter length of a Twin core Aluminium armoured XLPE cables (size in sq.mm 2X120.0). The materials should be procured as per ISI standard.

| <b>Schedule - J</b> |   |
|---------------------|---|
| Item No-01          | Supply of 25 kV Double pole isolator complete with interlocking mechanism |

The price shall cover supply of a double pole isolator (1600 Amp.) complete with mounting base, operation rod, operating rod guides and operating rod insulator required for the operation of the isolator, price shall also include the cost of operating rod isolator, Post insulator and 25 kV solid core insulator. The price shall also cover supply of ALCU strips, a padlock and number plate of approved design for each isolator. The price shall also include supply of small parts steel work for support of isolator and for support of operating rods on gantries masts and any post insulator to support jumpers/bus bars & Jumper connections.

[1] Bus bar terminals which shall be paid for under items.

[2] Aluminum bus bar, the cost of which shall be paid for under items.

|             |  |
|-------------|--|
| Item No -02 | Supply of 25 kV single pole isolator without earth contact assembly & post insulator |
|-------------|--|

The price shall cover supply of 25 kV single pole isolator switch (1600 Amp.) complete as per latest specification & drawing of CORE/RDSO & procured from RDSO/CORE latest approved source, complete with operating rods, operating rods guides and operating rod insulators, mounting base, arcing horns, integral locks etc. The price shall also covers the supply of isolator number plate of approved design for each isolator along with GI fasteners with fixtures. The price shall include

supply of materials for making jumper connection with OHE excluding supply of jumper wire. Price shall not include the cost of supply of SPS for support of isolators on gantry/masts and supports jumper and jumper connectors to insulators.

| <b>Schedule - K</b> |                            |
|---------------------|----------------------------|
| Item No-01          | Supply of Guy rod assembly |

The price shall cover supply of guy rod assembly of various lengths for traction masts, feeder line towers or supports complete with mast guy rod firings, guy rod with adjustments and part/s be grouted in the anchor block as per RDSO/CORE specification & drawing of RDSO/CORE procured from RDSO/CORE sources.

The price shall not include the cost of supply of a dwarf or stub mast with anchor plates and small parts steel work, complete with bolts and nuts etc.

#### COMPONENTS REQUIREMENT

| Rly. Id No.                            | Description of components  | Qty. per unit                                  |
|--|--|--|
| 3242                                   | Mast guy rod fitting (for fabricated mast) complete with 4 through G.I. 20mm. dia. bolts, nuts, locknuts and washers for attachment to mast/S.P.S. including appropriate fittings. | As per RDSO/CORE standard Designs and drawings |
| 501/ 5001-1/5001-3                     | Anchor bolts (complete with nuts locknuts and split pins)  | Ditto  |
| 5002                                   | Guy rod stirrup  | ditto  |
| 5004 or 5005 or 5006-1 or 5070 or 5071 | Guy rod with nut, washer and split pin   | Ditto  |
| 5007-1                                 | Anchor 'V' bolt  | Ditto  |
| 5008                                   | Anchor loop  | Ditto  |
| 5220                                   | Guy rod double strap assembly  | Ditto  |

|             |  |
|-------------|--|
| Item No- 02 | Supply of anticreep with Railway supply anticreep wire |
|-------------|--|

Price shall cover the supply of all materials for anti-creep including adjusters (RI-5020), mast anchor fittings (RI-3241) with bolts & nuts etc. at its termination on either side on structures ending clamps and other fittings viz 18mm single clevis assembly (RI5040/3010) anchor double strap assembly (RI-5030), double suspension clamp (RI-1170), double eye distance rod (RI-5183), Catenary ending clamp-1120 and 9T insulator (anti-creep wire supplied by railway).

|            |  |
|------------|--|
| Item No-03 | Supply of Stainless Steel Wire Rope for Three Pulley type modified (3:1 Ratio) Regulating equipment. |
|------------|--|

The price shall cover supply of Stainless Steel Wire Rope for Three Pulley type modified (3:1 Ratio) Regulating equipment as per RDSO specification suitable for modified 3 pulley ATD and should be procured from CORE/RDSO approved sources.

|            |   |
|------------|---|
| Item No-04 | Supply of materials for termination of FTA with complete fittings (Including Supply of cut-in-insulator). |
|------------|---|

The price shall cover supply of all materials for termination of FTA with complete fittings (Including Supply of cut-in-insulator) required for the termination of single Conductor/cross feeder (FTA with complete fittings) aluminium 25kV feeder with complete set including appropriate mast anchor fittings, adjuster, strain clamp, end fitting and splices as required and including the 9 Ton insulator assembly. The price shall also include the cost of double eye distance rod (RI No. 5183), if provided for any type of termination.

|            |   |
|------------|---|
| Item No-05 | Supply of double conductor termination of OHE (with Cut-in-insulator) |
|------------|---|

The price shall cover supply of all materials necessary for the yoked termination of two overhead equipment conductors on traction mast or structure including appropriate mast anchor fitting, clevis assembly, three adjusters, ending clamps for catenary and contact wires, anchor double strap assembly, equalizing/compensating plate and fittings and 9 Tonne insulator but excluding terminating wire.

|            |   |
|------------|---|
| Item No-06 | Supply of Galvanized steel flexible wire bond for traction with lugs for various length of each bond complete with lugs-3.0mtr. |
|------------|---|

The price shall cover supply of Galvanised Steel Flexible Wire structre bonds with lug having 3m length as per RDSO Dr. No. (For lug) TI/DRG/OHE/GTHLUG/RDSO/00001/04/0 duly crimped on both ends of each bonds and RDSO specification No. (for Bond) TI/SPC/OHE/GALSTB/0040 with A&C correction slip No.1 or latest.

|            |   |
|------------|---|
| Item No-07 | Supply of Galvanized steel flexible wire bond for traction with lugs for various length of each bond complete with lugs-3.5mtr. |
|------------|---|

The price shall cover supply of Galavanised Steel Flexible Wire structre bonds with lug having 3.5m length as per RDSO Dr. No. (For lug) TI/DRG/OHE/GTHLUG/RDSO/00001/04/0 duly crimped on both ends of each bonds and RDSO specification No. (for Bond) TI/SPC/OHE/GALSTB/0040 with A&C correction slip No.1 or latest.

|            |   |
|------------|---|
| Item No-08 | Supply of Transverse/Cross /Special bonds |
|------------|---|

The price shall cover supply of all materials including mild steel flat required to provide a longitudinal bond connecting a traction mast or structure or between two rails including all fasteners at both ends. The price shall include shaping and drilling of the bond compete with fasteners duly manufactured in accordance to CORE approved drawings.

|             |                         |
|-------------|-------------------------|
| Item No- 09 | Supply of earthing Heel |
|-------------|-------------------------|

The price shall cover supply of Earthing Heel for isolator from CORE/RDSO approved drawing/specification and should be procured from CORE/RDSO approved sources.

|            |  |
|------------|--|
| Item No-10 | Supply of Retro Reflective type Electric Engine Stop Board |
|------------|--|

Price shall cover supply of Retro Reflective type Electric Engine Stop Board as per RDSO specification. The materials should be procured through RDSO/CORE approved sources.

|            |   |
|------------|---|
| Item No-11 | Supply of Retro Reflective type Power Block Working limit Board |
|------------|---|

Price shall cover supply of Retro Reflective type Power Block Working limit Board as per RDSO specification. The materials should be procured through RDSO/CORE approved sources.

|            |   |
|------------|---|
| Item No-12 | Supply of Caution Board in English, Hindi & Regional Language |
|------------|---|

Price shall cover supply of enameled type caution board for 25kV AC traction in three language English, Hindi & Regional Language as per RDSO specification. The materials should be procured through RDSO/CORE approved sources.

|             |  |
|-------------|--|
| Item No- 13 | Supply of PG Clamp (1041) for Catenary to Catenary |
|-------------|--|

The price shall cover supply of PG Clamp (1041) for Catenary to Catenary as per latest specification & drawing of RDSO/CORE & procured from RDSO/CORE approved sources.

|            |                                    |
|------------|------------------------------------|
| Item No-14 | Supply of Sectioning Diagram Board |
|------------|------------------------------------|

Supply of sectioning diagram board of flex printing with frame, size 4 foot x 2 foot (Thickness of frame 1foot hollow square bar). The price shall include cost of supply of fasteners and fixtures on the section diagram board for cabin, LC goomti, station building, supply control posts, TPC and section control room. The firm should obtain prior approval of Sr.DEE/TRD/KGP or his authorized representative before finalization of sectioning diagram.

|            |                                  |
|------------|----------------------------------|
| Item No-15 | Supply of Single Earth Electrode |
|------------|----------------------------------|

Price shall cover supply of an earthing station with a single pipe embedded by driving or otherwise in an earth pit filed with charcoal and salt complete with protective concrete box and lugs suitable for directly connecting to MS flats of minimum size (50x6mm) of earth electrode with all requisite materials as per Drg. No. ETI/PSI/0222 with latest modification. Price also covers provision of protective concrete screen as per the above drawings.

|            |  |
|------------|--|
| Item No-16 | Supply of Earth leads 50mmX6mm mild steel laid in the ground/Exposed |
|------------|--|

The price shall cover the supply of Earth leads 50mmX6mm mild steel laid in the ground/Exposed all materials for earthing. The price shall cover erection of mild steel flat to connect earth electrode & structure/non track circuited rails. The price also includes supply of fastener and painting of MS flat with two coats of red-oxide zinc chromate primer & two finishing coat of bitumen conforming to IS:3043/87.

|            |                                 |
|------------|---------------------------------|
| Item No-17 | Supply of Earth Pit Cover & Box |
|------------|---------------------------------|

Price shall cover supply of earth pit cover and Box as per RDSO specification & procured from RDSO/CORE approved sources. The work shall be executed under the supervision of railway representative.

|            |  |
|------------|--|
| Item No-18 | Supply of Retro Reflective type structure number plate |
|------------|--|

The price shall cover supply of Retro Reflective type structure number plate as per RDSO specification. The materials should be procured through RDSO/CORE approved sources.

|            |                           |
|------------|---------------------------|
| Item No-19 | Supply of Contact Splices |
|------------|---------------------------|

Price shall cover supply of contact splices, the materials should be as per CORE/RDSO approved drawing/specification and procured from CORE/RDSO approved sources.

|             |                            |
|-------------|----------------------------|
| Item No -20 | Supply of Catenary Splices |
|-------------|----------------------------|

Price shall cover supply of catenary splices, the materials should be as per CORE/RDSO approved drawing/specification and procured from CORE/RDSO approved sources.

|              |  |
|--------------|--|
| Item No - 21 | Supply of LARGE SPAN WIRE ENDING CLAMP (130 sq. mm). |
|--------------|--|

The price shall cover supply of LARGE SPAN WIRE ENDING CLAMP (130 sq. mm) as per RDSO Drg. No. ETI/OHE/P/1140 Rev.B or latest specification and should be procured from CORE/RDSO approved sources.

|            |  |
|------------|--|
| Item No-22 | Supply of OHE equipment's excluding catenary, contact, jumper and dropper wires. |
|------------|--|

Supply of overhead equipment excluding Catenary, Contact, Jumper, feeder (Such as G.C.F and antitheft etc.), large span wire and dropper wires (which will be supplied by Railway). The Price shall cover supply of all components including dropper clips, parallel clamps for jumpers and splices (where there used is approved), but excluding Contact wire, Catenary wire, jumper wire, dropper wire, terminating wire and small part steel work complete with nuts and bolts etc., for attachment of number plate (enameled/recto reflective) to mast/structure, if any.

The OHE are consist of the following items.

|           |  |
|-----------|--|
| 1040-2    | Contact wire parallel clamp – (10 Nos.)                                |
| 1180      | Contact wire dropper clip – (140 Nos.)                                 |
| 1192      | Catenary wire dropper clip complete with bolts, nuts etc. – (140 Nos.) |
| 1110-2    | Contact wire ending clamp – (2 Nos.)                                   |
| 1120      | Catenary ending clamp – (3 Nos.)                                       |
| 5020-1/2  | Adjuster – (2 Nos.)  |
| 5030      | Anchor double strap assembly – (2 Nos.)                                |
| 5191/5192 | Compensating plate/ Equalizing plate if required – (1 No).             |
| 1031      | P.G. Clamp – (8 Nos.)  |
| 1050-3    | P.G. Clamp (150/160) – (4 Nos.)  |
| 1030-3    | P.G. Clamp – (4 Nos.)  |
| 1160      | Suspension Clamp – (2 Nos.)  |

#### **Schedule - L**

|            |  |
|------------|--|
| Item No-01 | Supply and erection of Retro Reflective type Unwired Turnout Board |
|------------|--|

Price shall cover supply and erection of Retro Reflective type Unwired Turnout Board as per RDSO specification. The materials should be procured through RDSO/CORE approved sources.

|             |   |
|-------------|---|
| Item No- 02 | Supply and erection of Anti-climbing device |
|-------------|---|

Price shall cover supply and erection of Anti-climbing device with galvanized steel fixture, barbed wire etc. including fasteners confirming to CORE/RDSO approved drawings.

#### **Schedule -M**

|             |   |
|-------------|---|
| Item No- 01 | Erection of fabricated and galvanised traction mast/TTC/Portal/Feeder Mast/AT Mast etc. |
|-------------|---|

The price shall cover cost of MANUAL erection, alignment and setting before grouting of individual galvanized traction masts/TTC/Portal/AT mast/ Gantry mast/Feeder Mast, main masts whether rolled or fabricated including those for head span, fabricated TTC/portal structure etc.

#### NOTE for measurement:

For the purpose of payment, the weights of individual rolled or fabricated traction mast and masts of head span shall be determined for each type on the basis of the payable weights per meter length as shown below for standard types, For special types, the payable weight per meter length will be indicated by the Purchaser at the time of approval of designs.

The price shall also include the cost of stenciling of location number, implantation, Ht. stagger, HRL marking and direction of E/socket on mast in the manner as directed by the purchaser. The price shall also include the straightening of mast bent during transit and cutting of mast to suite the site condition. Payment will be made as per the unit weight of the masts/structures.

#### **PAYABLE UNIT WEIGHTS FOR STANDARD MASTS**

| Sr. No. | Type of masts               | Standard Length in Meters | Weight in Kg./Mtr. including Galv. | Total Wt. of finished Galv. STR in Kg. |
|---------|-----------------------------|---------------------------|------------------------------------|--|
| 1       | 8 inch x 6 inch x 35 RSJ    | 9.50                      | 52.00                              | 494.00                                 |
| 2       | 6 inch x 6 inch x 25.15 BFB | 9.50                      | 37.10                              | 352.45                                 |
| 3       | B150                        | 9.50                      | 38.91                              | 369.690                                |
| 4       | B175                        | 9.50                      | 44.51                              | 422.890                                |
| 5       | B200                        | 9.50                      | 49.91                              | 474.19                                 |
| 6       | B225                        | 9.50                      | 60.31                              | 573.00                                 |
| 7       | B250                        | 9.50                      | 70.72                              | 365.268                                |
| 8       | NU                          | 10.445                    | 34.97                              | 365.268                                |
| 9       | NE1                         | 5.38                      | 34.178                             | 183.88                                 |
| 10      | NE2                         | 5.88                      | 33.875                             | 199.185                                |
| 11      | NB1                         | 1.50                      | 45.892                             | 68.838                                 |

|    |             |        |        |         |
|----|-------------|--------|--------|---------|
| 12 | NB2         | 3.00   | 37.001 | 111.003 |
| 13 | NB3         | 4.50   | 35.687 | 160.592 |
| 14 | NB4         | 6.00   | 35.035 | 210.210 |
| 15 | NB5         | 7.50   | 33.649 | 252.373 |
| 16 | NB6         | 9.00   | 33.551 | 301.964 |
| 17 | RU          | 10.58  | 59.308 | 627.475 |
| 18 | RE1         | 11.60  | 54.683 | 634.329 |
| 19 | RE2         | 12.10  | 54.591 | 660.563 |
| 20 | RB1         | 7.50   | 57.678 | 432.588 |
| 21 | RB2         | 9.00   | 56.412 | 507.71  |
| 22 | RB3         | 10.50  | 55.853 | 586.463 |
| 23 | RB4         | 12.00  | 55.437 | 665.248 |
| 24 | RB5         | 13.00  | 55.221 | 717.882 |
| 25 | OU          | 10.535 | 55.524 | 584.950 |
| 26 | OE1         | 10.548 | 52.218 | 550.796 |
| 27 | OE2         | 11.048 | 52.042 | 574.963 |
| 28 | OB1         | 1.50   | 77.842 | 116.764 |
| 29 | OB2         | 3.00   | 60.458 | 181.375 |
| 30 | OB3         | 4.50   | 57.828 | 260.226 |
| 31 | OB4         | 6.00   | 56.765 | 340.591 |
| 32 | OB5         | 7.50   | 54.026 | 405.202 |
| 33 | OB6         | 9.00   | 53.605 | 482.453 |
| 34 | TTC         | 10.135 | 69.842 | 784.876 |
| 35 | TTB1        | 5.50   | 47.874 | 263.312 |
| 36 | TTB2        | 8.00   | 45.353 | 362.829 |
| 37 | TTK1 & TTK2 |        |        | 87.668  |

|            |  |
|------------|--|
| Item No-02 | Erection of fabricated and galvanised steel work other than mast |
|------------|--|

The price shall cover erection of fabricated and galvanized steel work other than mast including fasteners which are required to be supplied by the contractor for erection purpose as part of erection charges. For standard fabricated galvanized small part steel work for which RDSO's drawings are available, the weight of small part steel work shall be considered for payment. However, in case the unit sectional weight of any member indicated in RDSO's drawing is not in conformity with the unit sectional weight as per the latest IS specification, the weight of the fabricated SPS work shall be calculated on the basis of latest IS specification and the same will be considered for payment with the due approval of Sr.DEE/TRD/KGP. For the non-standard fabricated SPS work, the calculated weight to be considered for payment under this item shall be included in the relevant drawing based on, latest IS sectional weight at the time of submitting the designs for approval of the purchaser. The price shall cover fabrication and erection of arrangements for mounting of traction mast on bridge piers/girder. The price shall also include erection of galvanized bolts, nuts washers etc. wherever required as per approved designs and drawings.

|            |  |
|------------|--|
| Item No-03 | Erection of regulating equipment, Modified 3 pulley type with counter weight |
|------------|--|

The price shall cover erection of counter weight assembly including 9 ton adjuster with double strap assembly and normal/anti-theft guide tube assembly, regulating equipment (3-pulley modified type), stainless steel wire rope required for the regulating equipment (3-pulley modified type), extra anchor attachment i.e. LDR locking and small parts of steel works if any. The price also covers adjustment of the entire regulating equipment. The price shall not include supply and erection of termination which will be paid separately.

|            |  |
|------------|--|
| Item No-04 | Erection of Single Bkt. Assembly complete with insulators for conventional OHE |
|------------|--|

The price shall cover erection of all components including dropper wires of 5mm dia,, and copper wires but excluding small parts steelwork, if any. However, this does not include the anticreep arrangement at masts/structures. The price shall include erection of:

| Rly. id No.                   | Description of components   | Qty. per unit |
|-------------------------------|---|---------------|
| 2400                          | Tubular stay arm assembly (including galvanized large ERW steel tube).  | 1 set         |
| 2110/2130/2380                | Catenary suspension bracket assembly or hook bracket  | 1 set         |
| 1160/2120/2140/1174           | Suspension clamp with packing saddle  | 1 set         |
| 2040/2080                     | Bracket tube assembly complete with tube cap and sleeve where required (including galvanized steel tube).                                       | 1 set         |
| 3070-1/2                      | Mast bracket fitting assembly including 2 off bolts, nuts, lock nuts and washer of 16 Ø for attachment to structure for small parts steel work. | 1 set         |
| 3020-1                        | Mast fitting for hook insulator including fasteners.  | 1 set         |
| 2150-2/2160-2                 | Register arm hook assembly complete with bolts, nuts and lock nuts.   | 1 off         |
| 2420/ 2430                    | Register arm assembly of raised register arm RRA assembly including galvanized steel tube.  | 1 set         |
| 2270-4 or 5<br>2460-2, 2470-2 | Register arm dropper assembly excluding dropper wire, but complete with bolts, nuts etc.  | 2 set         |
| 2390/2540/2520                | BFB steady arm or bent steady arm (where required)  | As required   |
| 2360/ 2490-2                  | 25 mm steady arm drop bracket/clamp   | As required   |
| 1220/1370/-3                  | Contract wire swivel clip or raised register arm clamp  | 1 off         |
| 2550-1/2                      | Anti-wind clamp   | As required   |

Any other items if required to replace the old cantilever assembly by new including insulator.

|             |  |
|-------------|--|
| Item No- 05 | Erection of section insulator assembly including core & cut-in-insulator |
|-------------|--|

Price shall cover erection of all components including core and cut-in-insulator required for a standard section insulator assembly including special arrangement for supporting the equipment's and terminal fittings for conductors and the section insulator assembly including PG clamp and the section insulator number tag, adjustable dropper etc. (adjustable dropper wire will be supplied by Railways).

|            |                              |
|------------|------------------------------|
| Item No-06 | Erection of Guy rod assembly |
|------------|------------------------------|

The price shall cover erection of guy rod assembly of various lengths for traction masts, feeder line towers or supports complete with appropriate mast guy rod fittings, guy rod with adjustments and part/s be grouted in the anchor block as per RDSO/CORE specification & drawing.

The price shall not include the cost of erection of a dwarf or stub mast with anchor plates drilled and welded in position, where required, for anchorage, and small parts steel work etc., if and for attaching the mast guy rod fittings to the mast/structure which shall be paid for separately under the relevant item.

#### COMPONENTS REQUIREMENT

| Rly. Id No.                            | Description of components   | Qty. per unit                                   |
|--|---|---|
| 3232/3242                              | Mast guy rod fitting (as per site requirement) complete with 4 shot bolts, nuts, locknuts and washers for attachment to mast/S.P.S. including appropriate fittings. | As per RDSO/ CORE standard Designs and drawings |
| 5001/5001-1 /5001-3                    | Anchor bolts (complete with nuts locknuts and split pins)   | Ditto   |
| 5002                                   | Guy rod stirrup   | ditto   |
| 5004 or 5005 or 5006-1 or 5070 or 5071 | Guy rod with nut, washer and split pin  | Ditto   |
| 5007-1                                 | Anchor 'V' bolt   | Ditto   |
| 5008                                   | Anchor loop   | Ditto   |
| 5220                                   | Guy rod double strap assembly   | Ditto   |

|            |  |
|------------|--|
| Item No-07 | Erection of anticreep with Railway supply Anticreep wire |
|------------|--|

The price shall cover erection of all materials including 9T insulator assembly and anti-creep wire. Price also includes replacement of suspension clamp by double suspension clamp required for provision of anti-creep. Payment shall be made on flat rate basis irrespective of length of anti-creep.

|             |   |
|-------------|---|
| Item No- 08 | Erection of Lightning Arrestor, 42kV, Metal Oxide Gapless type as per RDSO Specification No. TI/SPC/PSI/ MOGTLA/0101 [02/2015] or latest. |
|-------------|---|

Price shall cover erection of Lightning Arrestor, 42kV, Metal Oxide Gapless type as per RDSO Specification No. TI/SPC/PSI/ MOGTLA/0101 [02/2015] or latest complete with all fittings and accessories including Base insulator, adaptor plate, terminal connector & PG Clamp etc. Price shall also cover transportation of all materials from store depot to site.

|             |   |
|-------------|---|
| Item No- 09 | Erection and commissioning of Auxiliary supply transformer 25kV/240V, 10 KVA/ 25kVA with DO fuse assembly including base insulator (Rate also including supply and erection of arcing horn) |
|-------------|---|

Price shall cover erection, testing and commissioning of Auxiliary supply transformer 25kV/240V, 10 kVA/25kVA with DO fuse assembly including base insulator (Rate also including supply and erection of arcing horn) including jumper connection with OHE, mounted on steel pedestal on a traction mast or gantry of LT supply station or switching post and its commissioning there wise.

|             |  |
|-------------|--|
| Item No- 10 | Erection of Cu cable Single core size: 276 /0.4 (35 sq.mm) PVC insulated 1100V grade to RDSO specn. No RDSO/PE/SPEC/TL/0027[Rev.0] with Amndt.No.1 |
|-------------|--|

Price shall cover erection of Cu cable Single core size: 276/0.4(35 sq.mm) PVC insulated 1100V grade, complete with all fittings and accessories. Price shall also cover transportation of all materials from store depot to site and also release materials to store depot. Price also includes dismantling of all materials and no extra payment will be made for this.

|             |  |
|-------------|--|
| Item No- 11 | Erection of Class 3 Dis-connector suitable for 42kV Lightning arrestors as per RDSO Spec. No. TI/PSI/GAPLA/POLICY/13, Dtd.17/10/2013 |
|-------------|--|

Price shall cover erection of dis-connector for 42kV, Metal Oxide Gapless type Lightning Arrestor, complete with all fittings and accessories. Price shall also cover erection of earth plate for connecting base insulator to dis-connector, Straight bracket for connecting the Dis-connector to LA. Price shall also cover transportation of all materials from store depot to site and also release materials to store depot. Price also includes dismantling of all materials and no extra payment will be made for this.

|             |  |
|-------------|--|
| Item No- 12 | Erection of 1100V Grade Twin Core Aluminium armoured XLPE cables (size in sq.mm 2X120.0) |
|-------------|--|

The price shall cover erection of 1100V Grade Twin Aluminium armoured XLPE cable (Size in sq. mm 2x120.0) as per approved drawing and instruction given by the purchaser.

|            |   |
|------------|---|
| Item No-13 | Erection of materials for termination of FTA with complete fittings (Including Supply of cut-in-insulator). |
|------------|---|

The price shall cover erection of all materials required for termination of FTA with complete fittings (Including Supply of cut-in-insulator) single conductor/cross feeder (FTA with complete fittings)/all aluminium 25kV feeder with complete set including appropriate mast anchor fittings, adjuster, strain clamp, end fitting and splices as required and including the 9 Ton insulator assembly.

|             |   |
|-------------|---|
| Item No- 14 | Erection of double conductor termination of OHE (with Cut-in-insulator) |
|-------------|---|

The price shall cover erection of all materials necessary for the yoked termination of two overhead equipment conductors on a traction mast or structure, including appropriate mast anchor fitting, clevis assembly, three adjusters, ending clamps for catenary and contact wires, anchor double strap assembly, equalizing/compensating plate, distance rod fittings, 9 Ton insulator assemblies and terminating wire, if any. All the component/material shall be as per latest specification & drawing of RDSO/CORE.

|             |   |
|-------------|---|
| Item No- 15 | Erection of 25kV Double Pole Isolator complete with interlocking mechanism. |
|-------------|---|

The price shall cover erection of a double pole isolator (1600 Amp.) complete with interlocking mechanism, mounting base, operation rod, operating rod guides and operating rod insulator required for the operation of the isolator. The price shall also cover erection of operating rod insulator and 25 kV post insulator. The price shall also cover erection of ALCU strips, a padlock and number plate of approved design for each isolator. The price shall also include erection of small parts steel work for support of isolator and for support of operating rods on gantries masts and any post insulator to support jumpers/bus bars & Jumper connections.

|             |  |
|-------------|--|
| Item No- 16 | Erection of 25kV single pole isolator with earth contact assembly & post insulator |
|-------------|--|

The price shall cover erection of 25kV single pole isolator switch (1600 Amp.) complete with arcing horns, operating rods, operating rod guides, operating rod insulators, mounting base and integral locks, earth contact assembly and post insulator. The price also covers the erection of isolator number plate of approved design for each isolator. Price shall include erection of materials for making jumper connection with OHE excluding supply of jumper wire. The price shall cover erection of the above isolator assembly complete on mast/structure or gantries with earthing of isolator handle. The price shall also include erection of small parts steel work for support of isolator and for support of operating rods on gantries masts and any post insulator to support jumpers/bus bars.

|             |   |
|-------------|---|
| Item No- 17 | Erection of Galvanized steel flexible wire bond for traction with lugs for various length of each bond complete with lugs-3.0mtr. |
|-------------|---|

Price shall cover erection of Galvanized steel flexible wire bond for traction with lugs for various length of each bond complete with lugs-3.0mtr. Price also includes, if required drilling of hole of appropriate size in the rail and other structural member for fastening of bonds.

|             |   |
|-------------|---|
| Item No- 18 | Erection of Galvanized steel flexible wire bond for traction with lugs for various length of each bond complete with lugs-3.5mtr. |
|-------------|---|

Price shall cover erection of Galvanized steel flexible wire bond for traction with lugs for various length of each bond complete with lugs-3.5mtr. Price also includes, if required drilling of hole of appropriate size in the rail and other structural member for fastening of bonds.

|             |   |
|-------------|---|
| Item No- 19 | Erection of Transverse/Cross /Special bonds |
|-------------|---|

The price shall also cover erection of Transverse/Cross /Special bonds with two coats of red oxide paint and bitumen paint. Price also includes drilling of hole of appropriate size in the rail and other structural member for fastening of bonds.

|            |                                 |
|------------|---------------------------------|
| Item No-20 | Erection of 25kV Post Insulator |
|------------|---------------------------------|

The price shall cover erection of 25kV Post insulator including all components as per CORE/RDSO approved drawing/specification and should be procured from CORE/RDSO approved sources are required for the assembly including insulator but excluding small parts of steel work with nuts & bolts etc. if any.

|            |  |
|------------|--|
| Item No-21 | Erection of 25kV solid core cut-in-insulator |
|------------|--|

The price shall cover erection of 25kV solid core cut-in-insulator including all components as per CORE/RDSO approved drawing/specification and should be procured from CORE/RDSO approved

sources are required for the assembly including insulator but excluding small parts of steel work with nuts & bolts etc. if any.

|            |                           |
|------------|---------------------------|
| Item No-22 | Erection of earthing Heel |
|------------|---------------------------|

The price shall cover erection of all components required for the assembly including small parts steel work with bolts & nuts etc. if any.

|             |  |
|-------------|--|
| Item No- 23 | Erection of PG Clamp (1041) for Catenary to Catenary |
|-------------|--|

Price shall cover erection of PG Clamp (1041) for Catenary to Catenary as per RDSO Drg. Including fasteners. The price shall cover erection of all components.

|            |  |
|------------|--|
| Item No-24 | Erection of Retro Reflective type Electric Engine Stop Board |
|------------|--|

Price shall cover Erection of Retro Reflective type Electric Engine Stop Board as per RDSO/CORE approved drawing and instruction given by the purchaser. The price shall exclude the cost of fasteners and fixtures required for erection purpose.

|            |   |
|------------|---|
| Item No-25 | Erection of Retro Reflective type Power Block Working limit Board |
|------------|---|

Price shall cover Erection of Retro Reflective type Power Block Working limit Board as per RDSO/CORE approved drawing and instruction given by the purchaser. The price shall exclude the cost of fasteners and fixtures required for erection purpose.

|            |                                      |
|------------|--------------------------------------|
| Item No-26 | Erection of Sectioning Diagram Board |
|------------|--------------------------------------|

The price shall cover erection of Sectioning Diagram Board for all components including the small part steel works with bolts & nuts etc. if any.

|            |                                    |
|------------|------------------------------------|
| Item No-27 | Erection of Single Earth Electrode |
|------------|------------------------------------|

The price shall cover erection of an earthing station with a single pipe embedded into the ground by driving or otherwise in an earth pit filled with charcoal and salt complete with protective concrete box and lugs suitable for directly connecting two mild steel flats. The price also covers provision of concrete protective screen and painting of earth values and testing date etc. as specified.

|            |  |
|------------|--|
| Item No-28 | Erection of Earth leads 50mmX6mm mild steel laid in the ground/Exposed |
|------------|--|

The price shall cover the erection of Earth leads 50mmx6mm mild steel laid in the ground/Exposed all materials for earthing. The price shall cover erection of mild steel flat to connect earth electrode & structure/non track circuited rails. The price also includes two coats of red-oxide zinc chromate primer & two finishing coat of bitumen conforming to IS:3043/87.

|            |                                   |
|------------|-----------------------------------|
| Item No-29 | Erection of Earth Pit Cover & Box |
|------------|-----------------------------------|

The price shall cover the erection of all materials including excavation and digging of soil around the existing earth pit and fixing of earth pit box and cover.

|            |  |
|------------|--|
| Item No-30 | Erection of Retro Reflective type structure number plate |
|------------|--|

Price shall cover Erection of Retro Reflective type structure number plate as per RDSO/CORE approved drawing and instruction given by the purchaser. The price shall exclude the cost of fasteners and fixtures required for erection purpose.

|             |                             |
|-------------|-----------------------------|
| Item No -31 | Erection of Contact Splices |
|-------------|-----------------------------|

Price shall cover erection of contact splices with fasteners to splice existing OHE with newly laid OHE and adjustment thereof as per requirement.

|             |                              |
|-------------|------------------------------|
| Item No -32 | Erection of Catenary Splices |
|-------------|------------------------------|

Price shall cover erection of catenary splices with fasteners to splice existing OHE with newly laid OHE and adjustment thereof as per requirement.

|             |   |
|-------------|---|
| Item No- 33 | Erection of overhead equipment including catenary, contact, jumper & dropper wire |
|-------------|---|

Erection of overhead equipment including Catenary, Contact, Jumper, feeder wire (Such as G.C.F and antitheft etc.), large span wire and dropper wires (with will be supplied by Railway). The Price shall cover erection of all components including dropper clips, parallel clamps for jumpers and splices (where there used is approved), but excluding Contact wire, Catenary wire, jumper wire, dropper wire, terminating wire and small part steel work complete with nuts and bolts etc., for attachment of number plate (enameled/recto reflective) to mast/structure, if any.

The OHE is generally consist of the following items.

|           |  |
|-----------|--|
| 1040-2    | Contact wire parallel clamp – (10 Nos.)                                |
| 1180      | Contact wire dropper clip – (140 Nos.)                                 |
| 1192      | Catenary wire dropper clip complete with bolts, nuts etc. – (140 Nos.) |
| 1110-2    | Contact wire ending clamp – (2 Nos.)                                   |
| 1120      | Catenary ending clamp – (3 Nos.)                                       |
| 5020-1/2  | Adjuster – (2 Nos.)  |
| 5030      | Anchor double strap assembly – (2 Nos.)                                |
| 5191/5192 | Compensating plate/ Equalizing plate if required – (1 No).             |
| 1031      | P.G Clamp – (8 Nos.)   |
| 1050-3    | P.G Clamp (150/160) – (4 Nos.)   |
| 1030-3    | P.G Clamp – (4 Nos.)   |
| 1160      | Suspension Clamp – (2 Nos.)  |

|             |  |
|-------------|--|
| Item No- 34 | Removal of OHE equipment's including catenary, contact, jumper and dropper wires |
|-------------|--|

Price shall cover dismantling of existing OHE including jumpers, droppers, sectional insulators and other components along with Contract and Catenary wire. The dismantled materials shall be handed over to the purchasers store depot.

|            |  |
|------------|--|
| Item No-35 | Modification to existing equipment for adjustment of OHE and T/W checking of OHE |
|------------|--|

The price includes checking of OHE for final adjustment & inspection of OHE (i) stagger, height, turnout, crossover, overlap, section insulator etc. (ii) Removal of kinks and knots (iii) Adjustment of OHE as per SED. Tower wagon will be provided by Railways. The OHE is generally consists of the following items;

|                         |   |
|-------------------------|---|
| 1030-2, 3/1040-2/1050-3 | Contact wire parallel clamp.                              |
| 1180                    | Contact wire dropper clip.                                |
| 1192                    | Catenary wire dropper clip complete with bolts, nuts etc. |
| 1110-2                  | Contact wire ending clamp.                                |
| 1120                    | Catenary ending clamp.                                    |
|                         | Large span wire clamp.                                    |
| 5020-1/2                | Adjuster  |
| 5030                    | Anchor double strap assembly                              |
| 5191/5192               | Compensating plate/equalizing plate.                      |

|            |   |
|------------|---|
| Item No-36 | Shifting of OHE from old mast to new mast |
|------------|---|

The price shall cover transfer of overhead equipment to a cantilever assembly on a new mast or support, from the old mast or support and consequent adjustment to overhead equipment required such as, re-spacing of droppers, leveling etc. and consequent adjustment of the OHE, including erection of cantilever assembly.

|            |   |
|------------|---|
| Item No-37 | Dismantling & Removal of old mast/TTC Upright/Portal Upright/AT Mast etc. |
|------------|---|

Price shall comprising of cutting of mast from base of mast, dismantling and removal of old traction mast, AT Mast including TTC upright/Portal upright etc. transportation to consignee's depot and subsequent handing over of the same under proper procedure.

|            |   |
|------------|---|
| Item No-38 | Dismantling & removal of SPS including Portal boom/TTC Boom, DA, Short Chair etc. |
|------------|---|

Price shall comprising of cutting of Portal/TTC from base of Portal/TTC, dismantling and removal of traction Portal/TTC including SPS, transportation to consignee's depot and subsequent handing over of the same under proper procedure.

|            |  |
|------------|--|
| Item No-39 | Dismantling & Removal of Anchor assembly |
|------------|--|

The price shall cover dismantling of existing anchor assembly complete including guy rod, guy rod fittings etc. including SPS. The dismantled materials shall be handed over to the consignee's depot.

|            |   |
|------------|---|
| Item No-40 | Dismantling of OHE termination assembly |
|------------|---|

Price shall cover dismantling of existing OHE termination assembly, including SPS and other OHE (if any). The dismantled materials shall be handed over to the consignee's depot.

|            |                                    |
|------------|------------------------------------|
| Item No-41 | Dismantling of Cantilever Assembly |
|------------|------------------------------------|

Price shall comprising dismantling and removal of cantilever assembly, transportation to consignee's depot and subsequent handing over of the same under proper procedure.

|            |                                     |
|------------|-------------------------------------|
| Item No-42 | Dismantling of Regulating Equipment |
|------------|-------------------------------------|

Price shall cover dismantling of 3 pulley type (3:1) ratio complete with all accessories including counter weight assembly and SS wire rope for conventional/tramway OHE. The dismantled materials shall be handed over to consignee's depot or as per requirement of higher authority.

|            |                    |
|------------|--------------------|
| Item No-43 | Dismantling of FTA |
|------------|--------------------|

The price shall cover dismantling of FTA, including SPS and other OHE (if any). The dismantled materials shall be handed over to the purchaser's store depot.

|             |                                  |
|-------------|----------------------------------|
| Item No- 44 | Dismantling of Section Insulator |
|-------------|----------------------------------|

The price shall cover dismantling of section insulator complete including SPS and other OHE (if any). The dismantled materials shall be handed over to the consignee.

|            |                         |
|------------|-------------------------|
| Item No-45 | Dismantling of Isolator |
|------------|-------------------------|

The price shall cover dismantling of all components of SPI or DPI including small parts steel work with bolts & nuts etc. if any. The dismantled materials shall be handed over to consignee's depot.

|            |                             |
|------------|-----------------------------|
| Item No-46 | Transportation of materials |
|------------|-----------------------------|

Price shall cover transportation of all railway supplied materials from consignee's depot to work site including loading and unloading at different work site. Contractor's supply materials are not included in this item. The transportation of released materials which are not included in the scheduled items is to be paid under this item.

|            |   |
|------------|---|
| Item No-47 | Extra erection charge under power block (SI No-1, 2, 3, 4, 5, 7, 8, 9, 11, 13, 14, 15, 16, 20, 21, 22, 23, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44 & 45) |
|------------|---|

The price under this item cover extra charges over and above the erection rates of such items for erection of equipment in the vicinity of energized overhead equipment and feeders or erection of equipment with joints equipment already energized or an energized equipment which calls for a power block (Shut-off of traction power). The price payable under this item shall be 100% extra over the erection rates of the items referred to above, provided such work is not called for on account of non-compliance with specifications, approved drawings and instructions given by the purchaser from time to time. The extra erection rate under this item will not be payable, if power

block is given for a total duration of 4 hours or more in a day whether continuously or in different spells. Where the price under this item are applicable, the contractor shall finalize the quantities of various items of work to be done under a power block, jointly with the purchaser's engineer prior to taking the work in hand.

**ADEE/TRD/Sub/SRC**